IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Inventors	:	Jurgen Schmidt et al.
Serial No.	:	10/581,107
Filed	:	May 31, 2006
For	:	Method for Coding and Decoding Impulse Responses of Audio Signals
Examiner	:	Kile O. Blair
Art Unit	:	2614

APPEAL BRIEF

May It Please The Honorable Board:

Appellants initiate a new appeal under 37 CFR 41.27 in response to the Final Rejection, dated June 8, 2010 of Claims 1, 3-6 and 8-11 of the above-identified application. The fee of five hundred forty dollars ($540.00) for filing this Brief is to be charged to Deposit Account No. 07-0832. Enclosed is a single copy of this Brief.

Please charge any additional fee or credit any overpayment to the above-identified Deposit Account.

Appellants do not request an oral hearing.

I.   REAL PARTY IN INTEREST

The real party in interest of Application Serial No. 10/581,107 is the Assignee of record:

Thomson Licensing

46 Quai Alphonse Le Gallo

92100 Boulogne-Billancourt, France

II.   RELATED APPEALS AND INTERFERENCES

There are currently, and have been, no related Appeals or Interferences regarding Application Serial No. 10/581,107. A Notice of Appeal in Application Serial No. 10/581,107 was filed on September 7, 2010.

III.   STATUS OF THE CLAIMS

Claims 1, 3-6 and 8-11 are rejected, claims 2 and 7 have been cancelled, and the rejection of claims 1, 3-6 and 8-11 are appealed.

IV.   STATUS OF AMENDMENTS

All previous amendments were entered and are reflected in the claims included in Appendix I.

V.   SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 provides a method for coding impulse responses of audio signals, the impulse responses allow reproduction of sound signals corresponding to a certain room characteristic (page 1, lines 5-6 and 23-29; page 3, lines 8-9 and Fig. 1). An MPEG-4 encoder is used to encode multiple successive MPEG-4 PROTO params fields of an MPEG-4 BIFS stream for transmission of one or more impulse responses associated with a coded audio signal (page 1, lines 5-9; page 3, lines 8-12 and 31-34). An MPEG-4 encoder inserts into a first of the multiple successive MPEG-4 PROTO params fields

information about the following MPEG-4 PROTO params fields (page 3, 31-36; page 7, lines 1-3). The information comprises a number of the following MPEG-4 PROTO params fields to be used (page 5, lines 14-17; page 8, lines 5-6) and a number of impulse responses to be transmitted (page 8, line 9). A length information of the impulse response and samples representing the impulse response are inserted into the MPEG-4 PROTO params fields for each impulse responses (page 9, lines 10-11).

Claim 3 contains all the features of claim 1 along with the additional feature that a scalable transmission of the room impulse responses is enabled (page 8, lines 21-22).

Claim 4 contains all the features of claim 3 along with the additional feature that in a broadcast mode short versions of room impulse responses are frequently transmitted and a long sequence is less frequently transmitted (page 8, lines 22-25).

Claim 5 contains all the features of claim 3 along with the additional feature that in an interleaved mode a first part of the room impulse responses is frequently transmitted and the later part of the room impulse responses is less frequently transmitted (page 8, lines 25-28).

Claim 6 provides a method for decoding impulse responses of audio signals by an MPEG-4 decoder, wherein the impulse responses allow reproduction of sound signals corresponding to a certain room characteristic (page 1, lines 5-6 and 23-29; page 4, lines 2-4). One or more impulse responses in multiple successive MPEG-4 PROTO params fields of an MPEG-4 BIFS stream are received at an MPEG-4 decoder. (page 1, lines 5-9; page 4, lines 1-4 and 33-35 and Fig. 1). A first of the multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 PROTO params fields (page 4, lines 9-13; page 8, lines 1-2). The information comprises a number of the following MPEG-4 PROTO params fields used (page 5, lines 14-17; page 8, lines 5-6) and a number of impulse responses transmitted (page 8, line 9). The following MPEG-4 PROTO params fields include for each of the impulse responses a length information of the impulse response and samples representing the impulse

response (page 9, lines 10-11). The samples representing one or more impulse responses based on the information in the first MPEG-4 PROTO params field and the length information the MPEG-4 PROTO params fields are separated by an MPEG-4 decoder (page 5, lines 31-34). One or more impulse responses represented by the separated samples are used for calculation by an MPEG-4 decoder of a reverberation effect corresponding to the room characteristic (page 9, lines 22-24).

Claim 8 contains all the features of claim 6 along with the additional feature that the room impulse responses are received following a scalable transmission of the room impulse responses (page 8, lines 21-22).

Claim 9 contains all the features of claim 8 along with the additional feature that in a broadcast mode short versions of room impulse responses are frequently received and a long sequence is less frequently received (page 8, lines 22-25).

Claim 10 contains all the features of claim 8 along with the additional feature that in an interleaved mode a first part of the room impulse responses is frequently received and the later part of the room impulse responses is less frequently received (page 8, lines 25-28).

Claim 11 provides an apparatus for performing the method of claim 1 (page 1, lines 5-9 and Fig. 1).

VI.   GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over IEEE (E.D. Scheirer: "The MPEG-4 Structured Audio Standard" ACOUSTICS, SPEECH AND SIGNAL PROCESSING, 1998. PROCEEDINGS OF THE 1998 IEEE INTERNATIONAL CONFERENCE ON SEATTLE, WA. USA, 12-15 May 1998, vol. 6, pages 3801-3804, hereinafter known as "IEEE") in view of Lifshitz (U.S. Patent No. 6,833,840 B2).

Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over IEEE in view of Lifshitz (U.S. Patent No. 6,833,840 B2) and further in view of (Koenen, Rob. Coding of Moving Pictures and Audio: MPEG-4 Overview (V.21 – Jeju Version). Rep. No. ISO/IEC JTC1/SC29/WG11 N4668., International Organization for Standardization. 2002. 1-79, hereinafter referred to as "Koenen").

Claims 4, 5, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over IEEE in view of Lifshitz further in view of Koenen and further in view of (Scheirer, Eric D. "Structured audio and effects processing in the MPEG-4 multimedia standard." MULTIMEDIA SYSTEMS 7 (1999): 11-22, hereinafter referred to as "Multimedia Systems").

VII.   ARGUMENT

Applicants respectfully submit that IEEE, when taken individually or in any combination with Lifshitz, Koenen and Multimedia Systems, neither anticipates nor makes unpatentable the present claimed invention. Thus, reversal of the Final Rejection (hereinafter termed "rejection") of claims 1, 3-6 and 8-11 under 35 U.S.C. 103(a) is respectfully requested.

Rejection of Claims 1, 6 and 11 under 35 U.S.C. 103(a)

Reversal of the rejection of claims 1, 6 and 11 under 35 U.S.C. 103(a) as being unpatentable over IEEE in view of Lifshitz (U.S. Patent No. 6,833,840 B2) is respectfully requested because the rejection makes crucial errors in interpreting the cited reference. The rejection erroneously states that claims 1, 6 and 11 are unpatentable over IEEE in view of Lifshitz.

Overview of the Cited References

IEEE describes that the MPEG-4 standard defines numerous tools that represent the state-of-the-art in representation, transmission, and decoding of multimedia data. Among these is a new type of audio standard termed "Structured Audio." The MPEG-4

standard for structured audio allows for the efficient flexible description of synthetic music and sound effects, and the use of synthetic sound in synchronization with natural sound in interactive multimedia scenes. A discussion of the capabilities, technological underpinnings, and application of MPEG-4 Structured Audio is presented.

Lifshitz describes a PROTO implementation in MPEG-4. A PROTO object class, instantiating a PROTO object, calling the PROTO object into an MPEG-4 scene graph, and rendering the PROTO object is defined.

Koenen describes an overview of the MPEG-4 standard, explaining which pieces of technology it includes and what sort of applications are supported by it.

Multimedia Systems describes an overview of the "Structured Audio" and "AudioBIFS" components of MPEG-4, which enable the description of synthetic soundtracks, musical scores, and effects algorithms and the compositing, manipulation, and synchronization of real and synthetic audio sources. A discussion of the separation of functionality between the systems layer and the audio toolset of MPEG-4 is presented, and prospects for efficient DSP-based implementations are discussed.

CLAIM 1 AND 11

The failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103. Section 2143.03 of the MPEP requires the "consideration" of every claim feature in an obviousness determination. To render a claim unpatentable, however, the Office must do more than merely "consider" each and every feature for this claim. Instead, the asserted combination of the patents must also teach or suggest *each and every claim feature. See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added) (to establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art). Indeed, as the Board of Patent Appeal and Interferences has recently confirmed, a proper obviousness determination requires that an Examiner make "a searching comparison of the claimed invention - *including all its limitations* - with the

teaching of the prior art." *See In re Wada and Murph*y, Appeal 2007-3733, *citing In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis in original). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The present claimed arrangement provides coding impulse responses of audio signals. The impulse responses allow reproduction of sound signals corresponding to a certain room characteristic. An MPEG-4 encoder is used to encode multiple successive MPEG-4 PROTO params fields of an MPEG-4 BIFS stream for transmission of one or more impulse responses associated with a coded audio signal. Information about the following MPEG-4 PROTO params fields is inserted into a first of the multiple successive MPEG-4 PROTO params fields. The information includes a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted. A length information of the impulse response and samples representing the impulse responses are inserted into the following MPEG-4 PROTO params fields for each of the impulse responses. IEEE and Lifshitz, when taken individually or in combination, do not teach or suggest the features of the present claimed arrangement.

IEEE describes that the MPEG-4 standard defines numerous tools that represent the state-of-the-art in representation, transmission, and decoding of multimedia data. Among these is a new type of audio standard termed "Structured Audio." The MPEG-4 standard for structured audio allows for the efficient flexible description of synthetic music and sound effects, and the use of synthetic sound in synchronization with natural sound in interactive multimedia scenes. A discussion of the capabilities, technological underpinnings, and application of MPEG-4 Structured Audio is presented.

However, IEEE (with Lifshitz) neither teaches nor suggests "using ... multiple successive MPEG-4 PROTO params fields ... for transmission of one or more impulse responses ... inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4

encoder" as recited in claim 1 of the present arrangement. The subject matter of IEEE is based upon the Structured Audio standard specified in ISO/IEC 14496-3 subpart 5 (*see* IEEE page 3801, col.1, paragraph [0002] and the title of IEEE "The MPEG-4 Structured Audio Standard). This standard describes the transmission of room impulse responses which make use of the Structured Audio Sample Bank Format (SASBF) in wavetables. Usage of the SASBF requires a structured audio implementation or "structured coding schemes" (IEEE page 3801, col. 1, paragraph [0002]). While IEEE describes "a block of sample data" that "might contain an impulse response" (IEEE page 3803, col. 1, paragraph [0002]), IEEE (with Lifshitz) does not teach or suggest "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields" as recited in claim 1 of the present arrangement. The inclusion of impulse response data is not equivalent to inserting into a first field type data about multiple successive fields of the same type. The claimed arrangement advantageously makes use of multiple successive MPEG-4 PROTO fields to define a number of fields and impulse responses that are being transmitted in the data stream and associated with a particular coded audio signal. IEEE uses a different standard, i.e. Structured Audio, which may include impulse response. This is fundamentally different from the claimed method which utilizes multiple successive MPEG-4 PROTO fields to provide information including the number of MPEG-4 PROTO fields and the number of impulse responses to be transmitted.

Therefore, because IEEE (with Lifshitz) does not teach or suggest "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO param fields by said MPEG-4 encoder," IEEE (with Lifshitz) cannot teach or suggest "wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" as recited in claim 1 of the present arrangement.

In addition, as clearly stated in the preamble and the feature of the independent claims the invention as claimed concerns the encoding and decoding of impulse responses of audio signals, i.e. a plurality of impulse responses. A very flexible format is

specified in the claims, allowing one or more impulse responses, each having an arbitrary length, in particular very extensive length. On the other hand, IEEE only mentions that the bit stream header of a structured audio bit stream might contain a <u>single</u> impulse response, see IEEE page 3803, col. 1, paragraph [0002], which recites: "For example, a block of sample data might contain an impulse response that creates a particular reverberation effect when it is convolved with target sounds (FIR filtering is one of the standard fundamental operations of SAOL)." In fact, the above cite is the only mentioning of an impulse response in the whole IEEE document. Clearly, IEEE does not at all disclose a plurality of impulse responses. Therefore, IEEE also does not disclose information comprising a number of impulse responses transmitted in the claim.

Further, Page 3 of the Office Action states that "there is inherently information on the number of impulse responses in order for the header to be understood for configuration as disclosed, pg. 3803, left hand column, ¶ 2-3." The cited part of the IEEE merely mentions that "the header has been received, understood, and used to re-configure the synthesis engine" and that the header "might contain an impulse response" but nothing more. The Office Action provides no logical foundation why based on this, there necessarily must be information on the number of impulse responses. The fact that a certain characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that characteristic (In re Rijckaert, 9 F.3d 1531 (Fed. Cir. 1993)). Similarly, the Office Action has argued based on inherent disclosure for the inclusion of length information for each of the impulse responses, as specified in the independent claims. Again the Office Action has not provided evidence or reasoning tending to show inherency, although it is required under MPEP § 2112. It is noted that the Office Action partly refers to the applicant's specification. In addition, the Office Action also refers to IEEE, page 3803, column 1, ¶ 2. This is the only place an impulse response is mentioned in IEEE. However, there is no mention of anything related to the length of the impulse response. Additionally, Lifshitz does not even remotely disclose or suggest encoding or decoding impulse responses. Therefore, IEEE (with Lifshitz) does not teach or suggest "inserting into said following MPEG-4 PROTO params fields for each of said impulse

responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement.

Unlike the claimed arrangement, IEEE transmits an impulse response in a frame-like basis by using "blocks of sample data" which are received by a synthesis engine (IEEE page 3803, col. 1, paragraphs [0002] and [0003]). The synthesis engine then acts "roughly like a set of fixed synthesizers" by "receiving commands" and turning them into sound. Contrary to this, the present claimed arrangement uses the params array in order to transmit room impulse responses. Using blocks of sample data as in IEEE (with Lifshitz) is not equivalent to using the params array as in the claimed arrangement. IEEE (with Lifshitz) does not contemplate the use of a params array to transmit room impulse responses. In the present arrangement, information about the following MPEG-4 PROTO params fields is inserted "a first of said multiple successive MPEG-4 PROTO params fields" as recited in claim 1 of the present arrangement. IEEE (with Lifshitz) fails to operate in this manner. Furthermore, IEEE (with Lifshitz) does not teach or suggest "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement.

IEEE describes transmitting the header of a structured audio bit stream information to create a reverberation effect at the receiving end. Specifically, IEEE recites: "However, transmission of a reverberation algorithm written in SAOL is very inexpensive, perhaps no more than 200 bytes in the header ... Such a sound only requires as much bandwidth as is needed for the flat speed, plus a tiny overhead for the reverberator" (page 3803, right column, paragraph [0003], emphasis added). In contrast, the present claimed arrangement concerns a transmission and use of extensive room impulse responses (see Specification, page 9, lines 24-39) and transmits impulse responses of any length possible (see Specification, page 7, lines 5-6). The present claimed arrangement recognizes the importance of this since impulse responses can be very long (several seconds for a big church or hall). The transmission and use of real, measured room impulse responses allow a much more natural sound than the use of

synthetic room impulse responses requires a significant amount of data (*see* Specification, page 7, lines 5-6, page 7, lines 23-24, page 2 lines 3-6). The present claimed arrangement realizes that the transmission of such long impulse responses is difficult in the MPEG-4 environment and that the use of a structured audio implementation – as described in IEEE – has extreme high demands for code, complexity and execution power, and, therefore, is impracticable for MPEG-4 players at the time of the invention (*see* Specification, page 2, lines 6-18). However, the present claimed arrangement found a solution to transmit such extended impulse responses in a way compatible to the MPEG-4 standard by using "multiple successive MPEG-4 PROTO params fields" as recited in amended claim 1.

Page 3 of the Office Action concedes that IEEE does not explicitly teach the feature wherein successive MPEG-4 fields are MPEG-4 PROTO params fields. Therefore, it follows that IEEE cannot teach or suggest the feature of "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted; and inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement. The Office Action asserts that Lifshitz shows the claimed features of the present arrangement and combining the teachings of IEEE with Lifshitz would make the present claimed arrangement unpatentable. Applicants respectfully disagree with this assertion.

Lifshitz describes a PROTO implementation in MPEG-4. A PROTO object class, instantiating a PROTO object, calling the PROTO object into an MPEG-4 scene graph, and rendering the PROTO object is defined.

Lifshitz describes a PROTO implementation in MPEG-4 but does not teach or suggest MPEG-4 PROTO params fields of a data stream that is associated with a coded

audio signal as in the present claimed arrangement. Furthermore, Lifshitz does not even remotely teach or suggest transmitting one or more impulse responses using a PROTO implementation. The Office Action cites col. 4, lines 27-53 of Lifshitz as disclosing the features of the present claimed arrangement. Applicants respectfully disagree. The cited passage of Lifshitz recites "Version 2 of the MPEG-4 standard introduces PROTOs ... PROTOs may be better understood with reference to FIGS. 3 and 4 which represents a scene having two Person objects. In FIG. 3 both Person objects 300 and 302 have the same structure, each comprising a Voice object 304 and a Sprite object 306. The Voice and Sprite objects 304 and 306 may have different attributes as expressed by different field values" (Col. 4, lines 27-49). The cited passage describes that PROTOs are used. However, nowhere in the cited passage or elsewhere in Lifshitz (with IEEE) is there suggestion or disclosure of "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" as recited in claim 1 of the present arrangement. The mere disclosure that a certain type of field, i.e. PROTO fields, is not equivalent to inserting data into multiple successive PROTO params fields in an MPEG-4 BIFS data stream as in the claimed arrangement. Further, Lifshitz (with IEEE) does not teach or suggest "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement.

Even if the systems of IEEE and Lifshitz were combined, as suggested by the Office Action, the combination, similar to the individual systems, would not make the present claimed arrangement unpatentable. The combined system describes the use of a Structured Audio format and other possible uses of MPEG-4 technology. The combined system also describes PROTO implementation in MPEG-4. However, the combined system, similar to the individual systems of IEEE and Lifshitz, neither teaches nor suggests MPEG-4 PROTO params fields. Further, there is no suggestion or disclosure in the combined system of transmitting one or more impulse responses, as recited in the

present claimed arrangement. Therefore, the combined system, similar to the individual systems of IEEE and Lifshitz, neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" as recited in claim 1 of the present arrangement. Additionally, the combined system does not teach or suggest "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement. Therefore, since the asserted combination does not teach or suggest each and every feature of the claimed limitations, the Examiner has failed to establish a prima facie rejection and therefore the rejection is improper and invalid. Consequently, reversal of the Examiner's rejection of claim 1 under 35 U.S.C. §103 is respectfully requested.

Independent claim 11 provides the apparatus for the method of claim 1 and is considered patentable for the reasons set forth above regarding claim 1. Therefore, it is respectfully submitted that the rejection of claim 11 is improper and should be reversed.

CLAIM 6

The present claimed arrangement provides decoding impulse responses of audio signals by an MPEG-4 decoder. The impulse responses allow reproduction of sound signals corresponding to a certain room characteristic. One or more impulse responses in multiple successive MPEG-4 PROTO params fields of an MPEG-4 BIFS stream are received at an MPEG-4 decoder. A first of the multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 PROTO params fields. The information comprises a number of the following MPEG-4 PROTO params fields used and a number of impulse responses transmitted. The following MPEG-4 PROTO params fields include for each of the impulse responses a length information of the impulse response and samples representing the impulse response. The samples representing one or more impulse responses based on the information in the first MPEG-

4 PROTO params field and the length information the MPEG-4 PROTO params fields are separated by an MPEG-4 decoder. One or more impulse responses represented by the separated samples are used for calculation by an MPEG-4 decoder of a reverberation effect corresponding to the room characteristic. IEEE and Lifshitz, when taken individually or in combination, do not teach or suggest the features of the present claimed arrangement.

IEEE describes that the MPEG-4 standard defines numerous tools that represent the state-of-the-art in representation, transmission, and decoding of multimedia data. Among these is a new type of audio standard termed "Structured Audio." The MPEG-4 standard for structured audio allows for the efficient flexible description of synthetic music and sound effects, and the use of synthetic sound in synchronization with natural sound in interactive multimedia scenes. A discussion of the capabilities, technological underpinnings, and application of MPEG-4 Structured Audio is presented.

However, IEEE (with Lifshitz) neither teaches nor suggests "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein a first of said multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 params fields ... and wherein said following MPEG-4 PROTO params fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response; separating said samples ... by said MPEG-4 decoder" as recited in claim 6 of the present arrangement. The subject matter of IEEE is based upon the Structured Audio standard specified in ISO/IEC 14496-3 subpart 5 (*see* IEEE page 3801, col.1, paragraph [0002] and the title of IEEE "The MPEG-4 Structured Audio Standard). This standard describes the decoding of room impulse responses which make use of the Structured Audio Sample Bank Format (SASBF) in wavetables. Usage of the SASBF requires a structured audio implementation or "structured coding schemes" (IEEE page 3801, col. 1, paragraph [0002]). While IEEE describes "a block of sample data" that "might contain an impulse response" (IEEE page 3803, col. 1, paragraph [0002]), IEEE (with Lifshitz) does not teach or suggest "receiving, at an MPEG-4 decoder, one or more

impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein a first of said multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 params fields" as recited in claim 6 of the present arrangement. The inclusion of impulse response data is not equivalent to receiving a first field type data about multiple successive fields of the same type. The claimed arrangement advantageously makes use of multiple successive MPEG-4 PROTO fields to define a number of fields and impulse responses that are being received in the data stream and associated with a particular coded audio signal. IEEE uses a different standard, i.e. Structured Audio, which may include impulse response. This is fundamentally different from the claimed method which utilizes multiple successive MPEG-4 PROTO fields to provide information including the number of MPEG-4 PROTO fields and the number of impulse responses to be transmitted.

Therefore, because IEEE (with Lifshitz) does not teach or suggest "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein a first of said multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 params fields ... and wherein said following MPEG-4 PROTO params fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response; separating said samples ... by said MPEG-4 decoder," IEEE (with Lifshitz) cannot teach or suggest "said information comprising a number of the following MPEG-4 PROTO params fields used and a number of impulse responses transmitted" as recited in claim 6 of the present arrangement.

In addition, as clearly stated in the preamble and the feature of the independent claims the invention as claimed concerns the encoding and decoding of impulse responses of audio signals, i.e. a plurality of impulse responses. A very flexible format is specified in the claims, allowing one or more impulse responses, each having an arbitrary length, in particular very extensive length. On the other hand, IEEE only mentions that the bit stream header of a structured audio bit stream might contain a single impulse response, see IEEE page 3803, col. 1, paragraph [0002], which recites: "For example, a

block of sample data might contain an impulse response that creates a particular reverberation effect when it is convolved with target sounds (FIR filtering is one of the standard fundamental operations of SAOL)." In fact, the above cite is the only mentioning of an impulse response in the whole IEEE document. Clearly, IEEE does not at all disclose a plurality of impulse responses. Therefore, IEEE also does not disclose information comprising a number of impulse responses transmitted in the claim.

Further, Page 3 of the Office Action states that "there is inherently information on the number of impulse responses in order for the header to be understood for configuration as disclosed, pg. 3803, left hand column, ¶ 2-3." The cited part of the IEEE merely mentions that "the header has been received, understood, and used to re-configure the synthesis engine" and that the header "might contain an impulse response" but nothing more. The Office Action provides no logical foundation why based on this, there necessarily must be information on the number of impulse responses. The fact that a certain characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that characteristic (In re Rijckaert, 9 F.3d 1531 (Fed. Cir. 1993)). Similarly, the Office Action has argued based on inherent disclosure for the inclusion of length information for each of the impulse responses, as specified in the independent claims. Again the Office Action has not provided evidence or reasoning tending to show inherency, although it is required under MPEP § 2112. It is noted that the Office Action partly refers to the applicant's specification. In addition, the Office Action also refers to IEEE, page 3803, column 1, ¶ 2. This is the only place an impulse response is mentioned in IEEE. However, there is no mention of anything related to the length of the impulse response. Additionally, Lifshitz does not even remotely disclose or suggest decoding impulse responses. Therefore, IEEE (with Lifshitz) does not teach or suggest "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein said following MPEG-4 PROTO params fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 6 of the present arrangement.

Unlike the claimed arrangement, IEEE transmits an impulse response in a frame-like basis by using "blocks of sample data" which are received by a synthesis engine (IEEE page 3803, col. 1, paragraphs [0002] and [0003]). The synthesis engine then acts "roughly like a set of fixed synthesizers" by "receiving commands" and turning them into sound. Contrary to this, the present claimed arrangement uses the params array in order to receive room impulse responses. Using blocks of sample data as in IEEE (with Lifshitz) is not equivalent to using the params array as in the claimed arrangement. IEEE (with Lifshitz) does not contemplate the use of a params array to receive room impulse responses. In the present arrangement, information about the following MPEG-4 PROTO params fields is received from "a first of said multiple successive MPEG-4 PROTO params fields" as recited in claim 6 of the present arrangement. IEEE (with Lifshitz) fails to operate in this manner. Furthermore, IEEE (with Lifshitz) does not teach or suggest "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein said following MPEG-4 PROTO params fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 6 of the present arrangement.

IEEE describes transmitting and receiving the header of a structured audio bit stream information to create a reverberation effect at the receiving end. Transmitting and receiving "a reverberation algorithm written in SAOL is very inexpensive, perhaps no more than 200 bytes in the header ... Such a sound only requires as much bandwidth as is needed for the flat speed, plus a tiny overhead for the reverberator" (page 3803, right column, paragraph [0003], emphasis added). In contrast, the present claimed arrangement concerns the use of extensive room impulse responses (*see* Specification, page 9, lines 24-39) and allows the use of impulse responses of any length possible (*see* Specification, page 7, lines 5-6). The present claimed arrangement recognizes the importance of this since impulse responses can be very long (several seconds for a big church or hall). Transmitting and receiving real, measured room impulse responses allows a much more natural sound than the use of synthetic room impulse responses and requires a significant amount of data (*see* Specification, page 7, lines 5-6, page 7, lines

23-24, page 2 lines 3-6). The present claimed arrangement realizes that transmitting and receiving such long impulse responses is difficult in the MPEG-4 environment and that the use of a structured audio implementation – as described in IEEE – has extreme high demands for code, complexity and execution power, and, therefore, is impracticable for MPEG-4 players at the time of the invention (*see* Specification, page 2, lines 6-18). However, the present claimed arrangement found a solution to transmit and receive such extended impulse responses in a way compatible to the MPEG-4 standard by using "<u>multiple successive</u> MPEG-4 PROTO params fields" as recited in claim 6.

Page 3 of the Office Action concedes that IEEE does not explicitly teach the feature wherein successive MPEG-4 fields are MPEG-4 PROTO params fields. Therefore, it follows that IEEE cannot teach or suggest the feature of "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein a first of said multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 PROTO params fields, said information comprising a number of the following MPEG-4 PROTO params fields used and a number of impulse responses transmitted, and wherein said following MPEG-4 PROTO params fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response; separating said samples representing said one or more impulse responses based on said information in said first MPEG-4 PROTO params field and said length information in said following MPEG-4 PROTO params fields by said MPEG-4 decoder; and using said one or more impulse responses represented by said separated samples for calculation by said MPEG-4 decoder of a reverberation effect corresponding to said room characteristic" as recited in claim 6 of the present arrangement. The Office Action asserts that Lifshitz shows the claimed features of the present arrangement and combining the teachings of IEEE with Lifshitz would make the present claimed arrangement unpatentable. Applicants respectfully disagree with this assertion.

Lifshitz describes a PROTO implementation in MPEG-4. A PROTO object class, instantiating a PROTO object, calling the PROTO object into an MPEG-4 scene graph, and rendering the PROTO object is defined.

Lifshitz describes a PROTO implementation in MPEG-4 but does not teach or suggest MPEG-4 PROTO <u>params fields</u> of a data stream that is associated with a coded audio signal as in the present claimed arrangement. Furthermore, Lifshitz does not even remotely teach or suggest transmitting one or more impulse responses using a PROTO implementation. The Office Action cites col. 4, lines 27-53 of Lifshitz as disclosing the features of the present claimed arrangement. Applicants respectfully disagree. The cited passage of Lifshitz recites "Version 2 of the MPEG-4 standard introduces PROTOs ... PROTOs may be better understood with reference to FIGS. 3 and 4 which represents a scene having two Person objects. In FIG. 3 both Person objects 300 and 302 have the same structure, each comprising a Voice object 304 and a Sprite object 306. The Voice and Sprite objects 304 and 306 may have different attributes as expressed by different field values" (Col. 4, lines 27-49). The cited passage describes that PROTOs are used. However, nowhere in the cited passage or elsewhere in Lifshitz (with IEEE) is there suggestion or disclosure of "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein a first of said multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 PROTO params fields, said information comprising a number of the following MPEG-4 PROTO params fields used and a number of impulse responses transmitted" as recited in claim 6 of the present arrangement. The mere disclosure that a certain type of field, i.e. PROTO fields, is not equivalent to receiving data from multiple successive PROTO params fields in an MPEG-4 BIFS data stream as in the claimed arrangement. Further, Lifshitz (with IEEE) does not teach or suggest "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein said following MPEG-4 PROTO params fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 6 of the present arrangement.

Even if the systems of IEEE and Lifshitz were combined, as suggested by the Office Action, the combination, similar to the individual systems, would not make the present claimed arrangement unpatentable. The combined system describes the use of a Structured Audio format and other possible uses of MPEG-4 technology. The combined system also describes PROTO implementation in MPEG-4. However, the combined system, similar to the individual systems of IEEE and Lifshitz, neither teaches nor suggests MPEG-4 PROTO params fields. Further, there is no suggestion or disclosure in the combined system of receiving one or more impulse responses, as recited in the present claimed arrangement. Therefore, the combined system, similar to the individual systems of IEEE and Lifshitz, neither teaches nor suggests "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein a first of said multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 PROTO params fields, said information comprising a number of the following MPEG-4 PROTO params fields used and a number of impulse responses transmitted" as recited in claim 6 of the present arrangement. Additionally, the combined system does not teach or suggest "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein said following MPEG-4 PROTO params fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 6 of the present arrangement. Therefore, since the asserted combination does not teach or suggest each and every feature of the claimed limitations, the Examiner has failed to establish a prima facie rejection and therefore the rejection is improper and invalid. Consequently, reversal of the Examiner's rejection of claim 6 under 35 U.S.C. §103 is respectfully requested.

In view of the above remarks, it is respectfully submitted that the present claimed arrangement is patentable under 35 U.S.C. §103(a) and reversal of this rejection is respectfully requested.

Rejection of Claims 3 and 8 under 35 U.S.C. 103(a)

Reversal of the rejection of claims 3 and 8 under 35 U.S.C. 103(a) as being unpatentable over IEEE in view of Lifshitz (U.S. Patent No. 6,833,840 B2) further in view of Koenen is respectfully requested because the rejection makes crucial errors in interpreting the cited reference. The rejection erroneously states that claims 3 and 8 are unpatentable over IEEE in view of Lifshitz further in view of Koenen.

<div align="center">CLAIM 3</div>

Claim 3 is dependent on claim 1 and is considered patentable for the same reasons as claim 1. For the reasons presented above, IEEE and Lifshitz (alone or in combination) neither teach nor suggest the features of claim 1 of the present arrangement. Additionally, Applicant respectfully submits that Koenen, when taken individually or in combination with IEEE and/or Lifshitz, does not teach or suggest the features of the present claimed arrangement.

Koenen describes an overview of the MPEG-4 standard, explaining which pieces of technology it includes and what sort of applications are supported by it. Koenen, similar to IEEE and Lifshitz, also neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" as recited in claim 1 of the present arrangement. Although Koenen (with IEEE and Lifshitz) describes the scope and certain features of MPEG-4, it does not contemplate the use of "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" as recited in claim 1 of the present arrangement. Therefore, Koenen neither teaches nor suggests the claimed features recited in claim 1 of the present arrangement.

Koenen merely mentions that "PROTOs" are one of the new functionalities for "version 2 BIFS" in section 10.6.1 on page 44. However, Koenen (with IEEE and Lifshitz) does not describe any details of the PROTOs and does not teach or suggest "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields" as recited in claim 1 of the present arrangement. Further, as Koenen (with IEEE and Lifshitz) do not insert information about the following MPEG-4 PROTO params field into a first of the multiple successive MPEG-4 PROTO params fields as in the present claimed arrangement, Koenen (with IEEE and Lifshitz) also neither teaches nor suggests "inserting into said **following MPEG-4 PROTO** params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement.

The combination of IEEE, Lifshitz and Koenen, similar to the individual systems, also neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" and "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement. The combination of IEEE, Lifshitz and Koenen merely describes the use of a Structured Audio format and other possible uses of MPEG-4 technology, as well as PROTO implementation in MPEG-4. However, the combined system does not teach or suggest MPEG-4 PROTO params fields, as in the present claimed arrangement. The present claimed arrangement, in contrast provides for "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields" as recited in claim 1 of the present arrangement. Therefore, the combination of IEEE, Lifshitz and Koenen, similar to the individual systems, neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said

MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" and "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses, a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement.

Therefore, since the asserted combination does not teach or suggest each and every feature of the claimed limitations, the Examiner has failed to establish a prima facie rejection and therefore the rejection is improper and invalid. Further, since claim 3 is dependent upon claim 1 and therefore includes each and every limitation of claim 1, and claim 1 has been shown to be allowable, claim 3 should also be allowable for this reason alone. Consequently, reversal of the Examiner's rejection of claim 3 under 35 U.S.C. §103 is respectfully requested.

CLAIM 8

It was earlier put forth that claim 6 is allowable and the rejection of claim 6 should be reversed. As claim 8 is dependent on claim 6 and therefore includes all of the limitations found in claim 6, claim 8 is also considered allowable. Therefore, it is respectfully submitted that the rejection of claim 8 is improper and invalid. Consequently, reversal of the rejection of claim 8 under 35 U.S.C. §103 is respectfully requested.

Rejection of Claims 4, 5, 9 and 10 under 35 U.S.C. 103(a)

Reversal of the rejection of claims 4, 5, 9 and 10 under 35 U.S.C. 103(a) as being unpatentable over IEEE in view of Lifshitz (U.S. Patent No. 6,833,840 B2) further in view of Koenen and further in view of Multimedia Systems is respectfully requested because the rejection makes crucial errors in interpreting the cited reference. The rejection erroneously states that claims 4, 5, 9 and 10 are unpatentable over IEEE in view of Lifshitz further in view of Koenen and further in view of Multimedia Systems.

CLAIMS 4 and 5

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Claims 4 and 5 are dependent on claim 1 and are considered patentable for the same reasons as claim 1. For the reasons presented above, IEEE, Lifshitz and Koenen, when taken individually or in any combination, neither teach nor suggest the features of claim 1 of the present arrangement. Additionally, Applicants respectfully submit that Multimedia Systems, when taken individually or in any combination with IEEE, Lifshitz and Koenen, does not teach or suggest the features of the present claimed arrangement.

Multimedia Systems describes an overview of the "Structured Audio" and "AudioBIFS" components of MPEG-4, which enable the description of synthetic soundtracks, musical scores, and effects algorithms and the compositing, manipulation, and synchronization of real and synthetic audio sources. A discussion of the separation of functionality between the systems layer and the audio toolset of MPEG-4 is presented, and prospects for efficient DSP-based implementations are discussed.

Multimedia Systems, similar to the individual systems of IEEE, Lifshitz and Koenen, neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" and "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement. Multimedia Systems merely provides a description of the Structured Audio components of MPEG-4. However, as stated above in the arguments regarding IEEE, Lifshitz and Koenen, the present claimed arrangement provides a method that allows for the circumvention of transmission of impulse responses using Structured Audio. Thus, Multimedia Systems, similar to the individual systems of IEEE and Koenen, neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted"

and "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement.

Multimedia System and IEEE were written by the same author and were roughly published at the same time and use similar terminology; however, Multimedia Systems is only cumulative to IEEE. Multimedia Systems, similar to IEEE, does not at all teach or suggest PROTOs. Similar to IEEE, Multimedia Systems describes the use of the Structured Audio Sample Bank Format (SASBF) and Structured Audio Orchestra Language (SAOL). The SASBF and SAOL are used to apply advanced effects by using custom filters or reverberators (see page 15, section 2.3.6). Further, Multimedia Systems recites:

"For one, it is a clear advantage to minimize the number of SAOL processes running, as they will often be the most computationally complex part of an audio system. If there are to be multiple Structured Audio processes (whether for decoding or for effects processing) in a terminal, they will each require a run-time package, and therefore either a multiple-DSP system or a multithreaded scheduler (on the DSP) must be used. Neither of these alternatives is practical today" (page 2, section 4.1, last paragraph).

The author of Multimedia Systems (and IEEE) realizes that the structured audio implementation for transmitting impulse responses described in the system is too complex for practical use. However, contrary to the present claimed arrangement, the author of Multimedia Systems (and IEEE) did not come up with the solution for this problem. Even the combination of Multimedia Systems, IEEE, Lifshitz and Koenen does not solve this problem and does not teach or suggest the features of the present claimed arrangement.

The combination of IEEE, Lifshitz, Koenen, and Multimedia Systems, similar to the individual systems, neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" and "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement. The combination of IEEE, Lifshitz, Koenen, and Multimedia Systems, merely describes the use of a Structured Audio format and other possible uses of MPEG-4 technology, but does not contemplate the use of "MPEG-4 PROTO params fields" as recited in claim 1 of the present arrangement. The present claimed arrangement, in contrast, provides for "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields ... inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response." These features are neither taught nor suggested by the combined system. Therefore, the combination of IEEE, Lifshitz, Koenen, and Multimedia Systems, similar to the individual systems, neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" and "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement.

As IEEE, taken alone or in any combination with Lifshitz, Koenen and Multimedia Systems, does not teach or suggest all of the features of claim 1, it follows that since claims 4 and 5 are dependent on claim 1, claims 4 and 5 are considered

patentable for the reasons presented above regarding claim 1. Therefore, it is respectfully submitted that the rejection of claims 4 and 5 is improper and should be reversed.

<div align="center">CLAIMS 9 and 10</div>

IEEE, when taken alone or in any combination with Lifshitz, Koenen and Multimedia Systems, also does not teach or suggest all of the features of claim 6. It was earlier put forth that claim 6 is allowable and the rejection of claim 6 should be reversed. As claim 8 is dependent on claim 6 and therefore includes all of the limitations found in claim 6, claims 9 and 10 is also considered allowable. Therefore, it is respectfully submitted that the rejection of claims 9 and 10 is improper and invalid. Consequently, reversal of the rejection of claim 8 under 35 U.S.C. §103 is respectfully requested.

<div align="center">

VIII.   CONCLUSION

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IEEE, Lifshitz, Koenen, and Multimedia Systems, when taken individually or in any combination, neither teaches nor suggests "inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted" and "inserting into said following MPEG-4 PROTO params fields for each of said impulse responses, a length information of the impulse response and samples representing the impulse response" as recited in claim 1 of the present arrangement.

IEEE, Lifshitz, Koenen, and Multimedia Systems, when taken individually or in any combination, neither teaches nor suggests "receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields ... wherein a first of said multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 PROTO params fields, said information comprising a number of the following MPEG-4 PROTO params fields used and a number of impulse responses transmitted" and "wherein said following MPEG-4 PROTO params
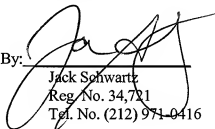
<div align="center">27</div>

fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response" as recited in claim 6 of the present arrangement.

Independent claim 11 provides the apparatus for the method of claim 1 and is also considered patentable for the reasons set forth above regarding claim 1. As claims 3-5 are dependent on claim 1 and claims 8-10 are dependent on claim 6, these claims are also allowable.

Accordingly it is respectfully submitted that the rejection of claims 1, 3-6 and 8-11 should be reversed.

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APPENDIX I - APPEALED CLAIMS

1.   (Rejected) Method for coding impulse responses of audio signals, wherein said impulse responses allow reproduction of sound signals corresponding to a certain room characteristic, comprising:

using an MPEG-4 encoder to encode multiple successive MPEG-4 PROTO params fields of an MPEG-4 BIFS stream for transmission of one or more impulse responses associated with a coded audio signal as defined in the following steps:

inserting into a first of said multiple successive MPEG-4 PROTO params fields information about the following MPEG-4 PROTO params fields by said MPEG-4 encoder, wherein said information comprises a number of the following MPEG-4 PROTO params fields to be used and a number of impulse responses to be transmitted; and

inserting into said following MPEG-4 PROTO params fields for each of said impulse responses a length information of the impulse response and samples representing the impulse response.

2.   (Cancelled)

3.   (Rejected) Method according to claim 1, wherein a scalable transmission of the room impulse responses is enabled.

4.   (Rejected) Method according to claim 3, wherein in a broadcast mode short versions of room impulse responses are frequently transmitted and a long sequence is less frequently transmitted.

5.   (Rejected) Method according to claim 3, wherein in an interleaved mode a first part of the room impulse responses is frequently transmitted and the later part of the room impulse responses is less frequently transmitted.

6. (Rejected) Method for decoding impulse responses of audio signals by an MPEG-4 decoder, wherein said impulse responses allow reproduction of sound signals corresponding to a certain room characteristic, comprising:

  receiving, at an MPEG-4 decoder, one or more impulse responses in multiple successive MPEG-4 PROTO params fields of an MPEG-4 BIFS stream, wherein a first of said multiple successive MPEG-4 PROTO params fields includes information about the following MPEG-4 PROTO params fields, said information comprising a number of the following MPEG-4 PROTO params fields used and a number of impulse responses transmitted, and wherein said following MPEG-4 PROTO params fields include for each of said impulse responses a length information of the impulse response and samples representing the impulse response;

  separating said samples representing said one or more impulse responses based on said information in said first MPEG-4 PROTO params field and said length information in said following MPEG-4 PROTO params fields by said MPEG-4 decoder;

  and

  using said one or more impulse responses represented by said separated samples for calculation by said MPEG-4 decoder of a reverberation effect corresponding to said room characteristic.

7. (Cancelled)

8. (Rejected) Method according to claim 6, wherein the room impulse responses are received following a scalable transmission of said room impulse responses.

9. (Rejected) Method according to claim 8, wherein in a broadcast mode short versions of room impulse responses are frequently received and a long sequence is less frequently received.

10. (Rejected) Method according to claim 8, wherein in an interleaved mode a first part of the room impulse responses is frequently received and the later part of the room impulse responses is less frequently received.

11.   (Rejected) Apparatus for performing a method according to claim 1.

APPENDIX II - EVIDENCE

Applicant does not rely on any additional evidence other than the arguments submitted hereinabove.

APPENDIX III - RELATED PROCEEDINGS

Applicant respectfully submits that there are no proceedings related to this appeal in which any decisions were rendered.

APPENDIX IV   -   TABLE OF CASES

1. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)

2. *In re Wada and Murphy*, Appeal 2007-3733

3. *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995)

4. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)

5. *In re Rijckaert*, 9 F.3d 1531 (Fed. Cir. 1993)

APPENDIX V - LIST OF REFERENCES

Non-Patent References:

1.   E.D. Scheirer: "The MPEG-4 Structured Audio Standard" ACOUSTICS, SPEECH AND SIGNAL PROCESSING, 1998. PROCEEDINGS OF THE 1998 IEEE INTERNATIONAL CONFERENCE ON SEATTLE, WA. USA, 12-15 May 1998, vol. 6, pages 3801-3804.

2.   Koenen, Rob. Coding of Moving Pictures and Audio: MPEG-4 Overview (V.21 – Jeju Version). Rep. No. ISO/IEC JTC1/SC29/WG11 N4668., International Organization for Standardization. 2002. 1-79.

3.   Scheirer, Eric D. "Structured audio and effects processing in the MPEG-4 multimedia standard." MULTIMEDIA SYSTEMS 7 (1999): 11-22.

U.S. Patent No.	Issued Date	102(e) Date	Inventors
6,833,840 B2	December 21, 2004		Lifshitz

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